

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

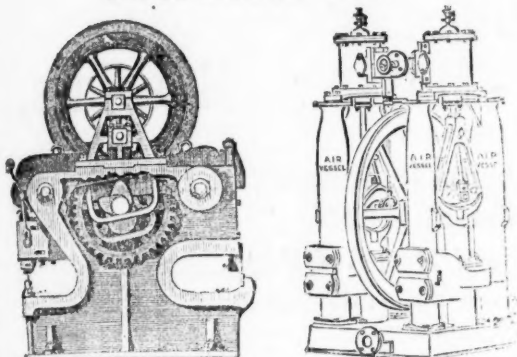
[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2235.—VOL. XLVIII.

LONDON, SATURDAY, JUNE 22, 1878.

PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, 21 4s.

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Steam Pumps, Shipbuilders' Tools,
BAR SHEARS.
ESTABLISHED 1852.



OLDFIELD ROAD IRON WORKS,
SALFORD, MANCHESTER.

For Excellence
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of Engines



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Model exhibited by
this Firm.

HARVEY AND CO.
ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL,
LONDON OFFICE,—186, GRESHAM HOUSE, E.C.

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PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
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MILLWORK, MINING MACHINERY, AND MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

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In Good Condition, at Moderate Prices—viz.,

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES;
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of
various sizes and descriptions; and all kinds of MATERIALS required for
MINING PURPOSES.

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COMPANY (LIMITED).

139, CANNON STREET, E. C
LONDON.

Alloy, No. II., for pinions, ornamental castings, steem
fittings, &c. £120 per ton
" No. IV., for pinions, pumps, valves, linings,
cylinders, &c. 130
" No. VI. (must be cast in chill) for bolts, &c.
This alloy has very great tensile strength 140
" No. VII., for hydraulic pumps, valves, and
plungers, piston rings, bushes and bearings,
for steel shafts 140
" No. XI., special phosphor-bronze bearing metal,
wearing five times as long as gun metal 112

The prices of castings vary according to the pattern, the quantity required, and
the alloy used.

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STANDARD LUBRICATING OILS
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DARK and PALE OILS for MACHINERY, RAILWAY, and MINING
PURPOSES, from TWO SHILLINGS per gallon, and upwards.

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CRANSTONHILL ENGINE WORKS, GLASGOW.
PATENTERS AND SOLE MANUFACTURERS OF
CHAPLINS' PATENT STEAM CRANES, HOISTS,
LOCOMOTIVES, AND OTHER ENGINES AND BOILERS.
LONDON HOUSE:—
MCKENDRICK, BALL, AND CO.,
63, QUEEN VICTORIA STREET, LONDON, E.C.



PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10,
28'30, 27'10, 28'40, 28'70 metres. Total advance of south head-
ing during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL
USE THROUGHOUT THE WORLD FOR MINING, TUN-
NELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the
most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operating
parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

N.B.—Correspondents should state particulars as to
character of work in hand in writing us for information,
on receipt of which a special definite answer, with
reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,
IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

MCKEAN AND CO.

ENGINEERS.

OFFICES,

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MANUFACTURED FOR MCKEAN AND CO. BY
MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS,"
GLASGOW.

SMITH & FORREST,
OIL REFINERS,
ROSIN OIL DISTILLERS,
GREASE AND VARNISH MANUFACTURERS,
HOLT TOWN.
MANCHESTER.

Price List on application.

[ESTABLISHED TEN YEARS.]

DUNN'S ROCK DRILL,
AND
AIR COMPRESSORS.

FOR DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS.

IS THE
CHEAPEST, SIMPLEST,
STRONGEST, & MOST EFFECTIVE
DRILL IN THE WORLD.

Dunn's Patent Rock Drill Company
(LIMITED).

OFFICE,—193, GOSWELL ROAD
LONDON, E.C.

THE
PATENT SELF-ACTING MINERAL
DRESSING MACHINE COMPANY
(LIMITED).

T. CURRIE GREGORY, C.E., F.G.S.

OFFICES,—GLASGOW: 4, WEST REGENT STREET.
LONDON: 52, QUEEN VICTORIA STREET, E.C.

IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWITH,
SUPPLIES MACHINES under the above Company's Patents for
DRESSING all METALLIC ORES. Dressing-floors having these Machines pos-
sess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines,
Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esclair-
wynn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argenteiferous Copper Mines, Peru; the Brats-
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chats and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur,
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly
profit on our Nanthead waste heaps amounted last year to £800, besides the ma-
chinery being occupied for some months in dressing ore-stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is a much short of 10 per cent."

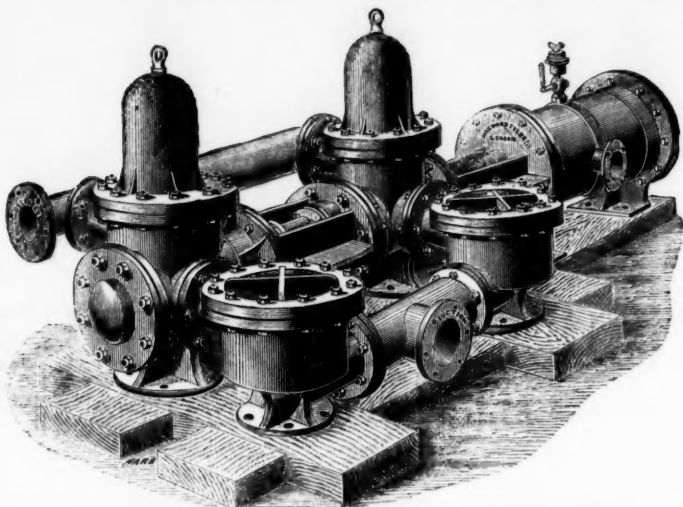
GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose,
and will do for any kind of metallic ores—the very thing so long needed for dress-
ing-floors."

Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES.

THE "UNIVERSAL" STEAM PUMP, ADAPTED FOR HEAVY DUTIES AND HIGH LIFTS.



ECKINGTON, February 4th, 1877.
Messrs. HAYWARD TYLER and Co.,
GENTLEMEN,

In reply to your enquiry, the 15 by 7 Long Stroke Pump Messrs. Hayward Tyler and Co. supplied us with is working remarkably well; 7 feet suction, and forcing the water 180 feet perpendicular, with 40 lbs. of steam. Before putting this engine in we had one H.P. Pumping Engine, 50 inch cylinder, 9 feet stroke, and firing six boilers, 36 feet by 4 feet, to drive it, now we only require two of the above boilers to do the same work with much less annoyance and attention.

I am, Gentlemen, yours truly,
JOHN MARPLES,
Engineer to J. and G. WELLS, Eckington Collieries.

TESTIMONIALS.

THE PATENT ANTHRACITE COKE CO.,
SWANSEA, 24th January, 1877.

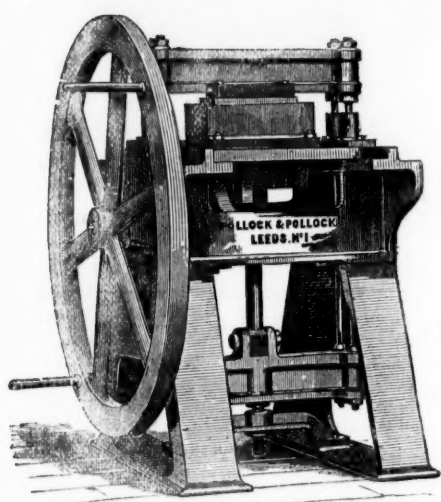
Messrs. HAYWARD TYLER and Co.,
DEAR SIR,—In reply to yours of the 15th instant, I beg to give you the following particulars of what your Universal 21 inch by 6 inch is doing at one of our collieries. The vertical height of column is 400 feet, steam pressure 40 lbs. per square inch, water pumped 3500 gallons per hour. Average work per day, 16 hours, or 56,000 gallons per day. I am, yours truly,
WALTER LEWIS.

YATE COLLIERIES, near CHIPPING SODNEY,
January 24th, 1877.
Messrs. HAYWARD TYLER and Co.,
GENTLEMEN,

In reply to yours of the 15th inst. (which absence prevented my attending to earlier), I am very pleased to add a testimonial to the efficiency of your "Universal" Steam Pump. The one you supplied to us has worked most satisfactorily for the past six months, without giving us the least trouble. It is lifting over 2,000 gallons an hour up a perpendicular height of 480 feet—going 30 strokes per minute, with a steam pressure of 30 lbs. per square inch—boiler 340 yards from pump. I can strongly recommend it as the most efficient pump for high lifts ever seen. I shall be very pleased to give information to any of your friends, or take them to view it working. Yours faithfully,
EDWD. W. B. MONKS, Managing Director

SOLE MAKERS,

HAYWARD TYLER AND CO., Whitecross-street, LONDON.



POLLOCK AND POLLOCK, LONGCLOSE WORKS, NEW TOWN, LEEDS, POLLOCK'S PATENT BRICK PRESS, The New "XL" Brick-Making Machines,

THE CHEAPEST AND BEST IN THE MARKET.

Improved Grinding Pans, with patent self-acting delivery.
Vertical and Horizontal Engines.

COLLIERY ENGINEERS.—WINDING ENGINES OF ALL SIZES.

POLLOCK AND MITCHELL'S PATENT KILNS are the Cheapest and Simplest.

London Office—155, Fenchurch Street, E.C.

JOSEPH FENTON & SONS,

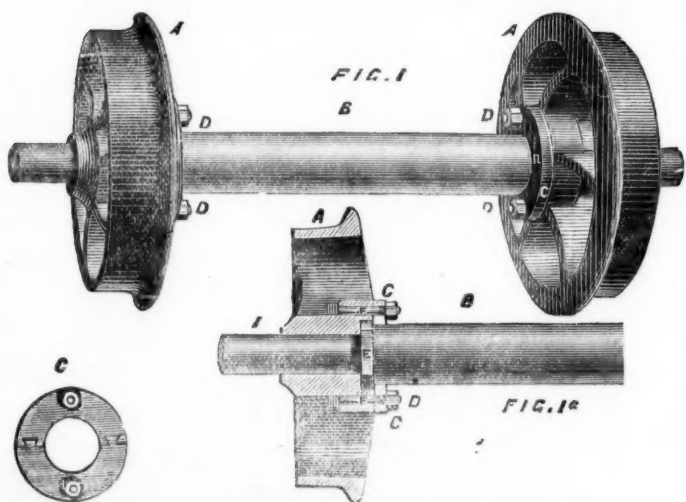
MANUFACTURERS OF

CAST STEEL AND FILES,
AND

CRUCIBLE CAST STEEL CASTINGS,

Sykes Works, Eyre-st. & Bridge-st., Sheffield. London Office: 118, Cannon-st., E.C.

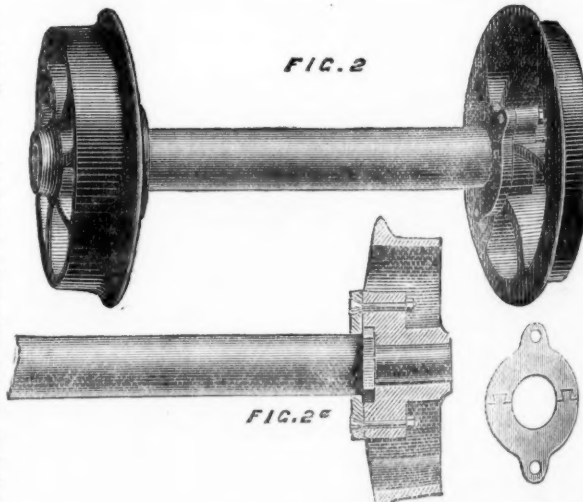
A New Patent Method of Fitting up Wheels and Axles.



Figs. 1 and 1a show a longitudinal view and plan of a pair of corf wheels and axles fitted up for outside bearings, and Figs. 2 and 2a for inside bearings. A A are the wheels; B is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle, which is forged of solid steel; the axle is secured into the recess partly by being sufficiently tightly fitted to require driving home with a hammer, and partly by the washer. Around the axle adjoining the boss is fixed the washer, made in two parts and dovetailed, so as to allow of being fixed after the collar has been forged on the axle. The washer is secured to the boss by bolts and nuts, both in outside and inside bearings; in the case of inside, by means of lugs cast on the boss, and the washer made of corresponding shape; the washer is made of crucible cast steel. The only tool required for fitting is an ordinary spanner for outside bearings, and a box spanner for inside bearings.

Now what are the advantages of this method? You secure a simple way of fitting—it can be done by anyone who has seen it—the only tool required being a spanner; the wheels can be detached from or secured to the axle in a few minutes. The next



advantage is the perfect solidity attained, the wheel and axle practically becoming as one piece. The durability results from the toughness of the material, and the solidity secured in the fitting. Another thing is the wheels do not need to be put in the fire to detach them, as is the case in ordinary wheels. (N.B.—Our wheels cannot be injured by being heated and plunged into cold water, which would render other steel wheels perfectly brittle as glass.) Saving in fuel and wages is evident—no skilled labour being required to re-fit wheels in case of a strained axle. By adopting this system colliery owners may save hundreds of pounds sterling yearly.

WIRE ROPES.

JOHN AND EDWIN WRIGHT,

PATENTEES,



ESTABLISHED 1770.

MANUFACTURERS OF EVERY DESCRIPTION OF
IMPROVED
Patent Round and Flat Wire Ropes,

From the very best quality of Charcoal and Patent Steel Wire. Galvanised Wire, Ropes for Ships' Rigging, Galvanised Signal and Fencing Strand, Copper Rope, Lightning Conductors, Colliery Ropes and Steam Plough Ropes made from the best Patent Improved Steel Wire.

PATENT ROUND AND FLAT HEMP ROPES,
Hemp, Flax, Engine Yarn, Cotton Waste, Tarpaning, Oil Sheets, Brattice Cloth, Wagon Covers, &c., &c.

UNIVERSITY WORKS, MILLWALL, POPLAR, LONDON.
UNIVERSITY WORKS, GARRISON STREET, BIRMINGHAM.
CITY OFFICE, No. 5, LEADENHALL STREET, E.C.

All communications to be forwarded to the BIRMINGHAM ADDRESS.

The "BURLEIGH" ROCK-BORING COMPANY (LIMITED).

100, KING STREET, MANCHESTER.

RICHARD MOTTRAM, Secretary.

For the Sale of the "Burleigh" Rock Boring Machinery; and also
for Sinking Shafts, Cutting Tunnels and Levels, and General
Rock Blasting Operations by Contract.

References permitted to—

Messrs. BOLCKOW, VAUGHAN, AND CO. (LIMITED), Middlesbrough.
THE DOWLAIS IRON COMPANY (LIMITED), South Wales.
THE EBBW VALE STEEL IRON, AND COAL COMPANY (LIMITED), South Wales.
THE CRUMLIN VIADUCT WORKS COMPANY (LIMITED), South Wales.
T. T. J. WALLER, Esq., Railway Contractor, Gisors, near Skipton.
TURNER AND SON, Limestone Quarries, Kiverton Park, near Sheffield.

CATALOGUES AND PRICE LISTS OF MACHINERY FORWARDED ON APPLICATION TO THE COMPANY'S OFFICE.

About two years ago a small party fitted out a schooner with every requisite for working these diggings, and with stores equal to two years' consumption, and arrived at the Straits at the commencement of the season. This party selected a spot which they considered suitable for their operations, and had commenced forming a settlement. They were one morning surrounded by a band of natives, who gave them to understand that they could not "lodge there," and without further molestation permitted them to remove their goods

and implements from the shore to the schooner. This done they were given to understand that they must leave the Straits, and go to any other country they might think fit, but not to return there. Thus ended the first expedition for gold mining in the Straits of Magellan.

JACKSON BARWISE.

30, Grove-lane, Camberwell, June 18.

THE NEW SPECULATION—GOLD MINING.

Sir,—In reply to "Constant Reader," I beg to say it will be prudent for him in future to be more careful in his expressions. I consider his letter objectionable both to the company and to Captain Vivian. I know Capt. Vivian to be a thorough practical mining engineer, not one of those drawing room managers, but a hard working, persevering agent. As regards the Argentine, Capt. Vivian, I have been told for a fact, has never been to such a place since the formation of the company.

MINING INVESTOR.

THE SLATE TRADE.

Sir,—The American papers have lately proclaimed to the world that the States have supplied England during the last year with 750,000 squares of such fine quality of roofing slates that the manufacturers and dealers there have bought slate quarries here for future service, and that American slates are successfully competing with English in many other markets. I think you would be doing a great service to this important trade if you would make known through your invaluable Journal what amount of accuracy there is in these American statements. Can it be that they have still some more quarries they wish to sell of their "practically inexhaustible supply?" Could some correspondent tell us the rate of carriage from their quarries to the best shipping port—New York, for instance—and the rate of freight per ton to London, or elsewhere in England? Is labour, carriage to shipping port, and freight higher from Wales to London than from the United States to London?—June 15.

H. O.

THE CONFERENCE, COMMERCE, AND MINING.

Sir,—Lord Beaconsfield is no cosmopolite. He is Leader in the House of Lords, and an Englishman to the backbone; he lives, moves, and breathes for British interests alone. It is the fashion among certain extreme Radicals, insane fanatics, and Gladstonianes to pour every phial of contempt and vituperation upon Lord Beaconsfield, and to represent him as a tawdry adventurer, attitudinising for his personal pleasure on the constitutional tight-rope of the Queen's country and dominions. Lord Beaconsfield is an older, a wiser, and a sadder man, for the advantage of all of us. And we refuse to believe that his love of his country is in any way deficient or less than Prince Bismarck's love for his country, and all honour to him. Germany is more to him than all the rest of the world put together. No man better than Lord Beaconsfield knows the precipice to the brink of which the Peace-at-any-price party has dragged the country. Lord Beaconsfield knows that if, as Prime Minister now, he was to pander to the will-o'-the-wisps of a hollow popularity, and bow to the wheezy instincts of rotten traders and bankrupt commercial interests, history would load his achievements with a burden of infamy more richly deserved. There is no man in the realm whose mind is more delicately toned to measure the probable verdict of history than the Premier. He and Prince Bismarck are now face to face in the Council Chamber of Europe, and these gentlemen, if true to the instincts of their intellects and principles—and who can doubt the wavering of either for a moment?—then we may hope and believe that their joint efforts will establish and confirm a peace that shall last at least during the present century.

One of the greatest perils attendant upon the rampant speculation now prevailing on the Stock Exchange is caused by the too great and many facilities presented by banks and discount companies to advance on stocks and shares. Once, however, the revival in trade for which we look has given unmistakable evidences of established reality money will flow back into its accustomed channels, and if due caution be exercised a gradual advance will inevitably follow in its value, and thus still further loosen the springs of capital. It is to be hoped that it may not be too rashly lavished on risky undertakings or in unhealthy channels of commerce. With these observations there will be a healthy check on the over-luxuriance of speculation, and if the rise on values should prove important in time many evils will be averted, and the tone and character of prices prove far more stable and permanent through such strict and necessary surveillance. If the movement now set in be wisely taken advantage of a period of prosperity may not be far off.

Men are always too ready to forget even the dearly-bought lessons of recent experience, and the first upward lift of the wave of returning confidence is only too likely to encourage over-speculation, of too rash enterprise, and of too great readiness to incur unsafe risks, especially if caution and shrewd sagacity in the selection of sound securities be not observed by investors. The very fact that the abundance of cheap money promises to provide almost boundless facilities for new ventures, and hitherto untried enterprise, is suggestive of danger, and hence additional observation, discrimination, and precautions should be adopted.

The glut of markets, due to continuous over production and the shrinking of prices, has made it necessary to reduce wages and utilise all possible devices for cheapening production. Time must necessarily with cheapened prices tend greatly to absorb stocks, and thus materially relieve manufacturers and producers. As there is every probability of a bountiful harvest this year, and a strong likelihood of all apprehensions of a grievous war being definitely removed, we are entitled to count with something like confidence upon a real revival of trade and enterprise before the end of the year. Recent experiences have made capital timid. It has been frightened back from the ordinary avenues in which it fructified in remunerative undertakings, and has largely taken refuge in the assured safety of Consols and other exceptional securities. But with revived trade and manufacture commerce will expand, money advance in value, and speculative enterprise augment, especially industrial pursuits and undertakings, money will become once more circulated, profits will engender confidence, and speculative adventure prosper, while probably no description of property will prove so attractive and remunerative as mining adventure. There is a fascination in mining peculiar to the spirit of Englishmen, and mining just possesses those risks which absorb the attention and encourage the greed of capitalists. There are no other channels open for the employment of capital which embody so many substantial and brilliant prizes as that of mining. Devon Great Consols yielded dividends of 1160% on each 1% share; Friendship, 3000% on each 50% share; South Caradon, 742% 10s. on each 1% share; Treavean, 4500% on each 32% 10s. share; Levant, 2000% at least on each 24% 10s. share; while hundreds of other brilliant prizes may be referred to. The Buller shares, 5% paid, sold at 1000% each; Basset, 800% on 2% 10s.; Lisburne, 500% on 18% 15s. paid, and has declared dividends of 588% 10s. a share, and is a profitable mine still. Tuckroft, Dolcoath, West Seton, Minera, Great Laxey, Van, and many others still existing are equally important properties; among the more recent "gems" may be classed South Condurrow, Peavor, Eliza Consols, Mellanear, Wheel Newton, Grogwinion, and Leadhills; while Grenville, Agar, Temple, Pateley Bridge products exceed costs, returning 30 tons of metallic lead monthly; Haultall, Blaen Caelan, D'Eresby Mountain, and Tyn-y-Fron requiring only time and practical development in order to render them great, substantial, and remunerative properties.

The Whitson Mine, situate on the Devonshire banks of the Tamar, a silver-lead mine of acknowledged worth and prospective expansion, has been purchased by us and divided into 64 shares of 64% each; 2000% to 3000% is considered ample to open out the property and discover minerals in bulk, of rich quality, and of unusual promise for early and large dividends. In course of time the shares will be sub-divided, and the company registered upon the Limited Acts. At present the operations will be conducted upon the Cost-book System; hence the workings are carried out under the immediate supervision and control of the shareholders themselves. A few shares are for sale at par; but none need apply who are not willing to wait a year for results, for certain preparatory work has to be

carried out, upon achieving which it is pronounced by authorities and experts there will be realised a mine second to none in the kingdom.

R. TREDINNICK,

Consulting Mining Engineer.

Exchange, 66, Coleman-street, London, June 18.

LEAD MINING IN DERBYSHIRE.

Sir,—Would your able correspondent, whose article on Lead Mining in Derbyshire appears in last week's Supplement, state whether during his inspection of the mines at Wirksworth he examined any mines which are worked in the decomposed mountain limestone in Brassington and Cassington? If a tithe of what the old miners in Brassington tell me is true the districts I have mentioned are the finest for lead mining in the whole county of Derbyshire. Mining in the solid limestone, or in the millstone grit and Yoredale shales, is very costly, especially in the limestone formation when the igneous rocks are met with; but in the decomposed limestone where the moles and the plough turn up the lead, and the large and prolific veins are found at about an average depth of 20 fms., and in which I was assured by highly respectable and experienced miners blocks of solid lead weighing 1 ton each are met with, there ought to be a rich future for capitalists. Owing to the porosity of the strata all the rainfall disappears, the mines are perfectly dry, and no engine power for pumping is required. I was offered tenders for sinking a shaft in this formation 20 fms. deep, and have the timber put in for 2% per fathom, and the men would make good wages. And yet most of the mining in the district I have named is so primitive as to carry one back 500 years. I visited one place where a few men were nibbling for lead, and they found some splendid ore, but their whole plant appeared to be not worth more than 10%.

As to developing the mines, that seemed quite out of the question. Capital and enterprise would soon change the aspect of these districts, which appears to me to present advantages rarely to be met with in any county. Let us hope that the Congress now sitting in Berlin will eventuate in a peaceful solution of the Eastern difficulty; public confidence will be restored, and sound, healthy, and profitable mining adventures in Derbyshire come to the front.

June 18.

F. G. S.

LLANRWST AND BETTWS-Y-COED MINING DISTRICT.

Sir,—Having in company with Captain Roberts inspected the D'Eresby Mountain and Aberllyn Mines, I can corroborate that gentleman in saying that I believe the Aberllyn lode is the D'Eresby Mountain Gorse lode. I had a hasty inspection also of the surface of most of the mines and sets of the district; and if the mines prove as beautiful for mineral underground as the surface is for scenery, it will be very pleasant to be a shareholder, and to attend the meetings of the shareholders, which should be upon the mines.

Gresham House, June 20.

T. P. THOMAS.

BLAEN CAELAN UNITED LEAD MINES.

Sir,—I observe in last week's Journal your Correspondent from North Wales, Sulop, and Cardigan classes Blaen Caelan amongst the "slightly paying and prospective mines" which he says will have to face the question whether lead mines can be made to "pay on a production of 1 ton of ore per fathom." While agreeing with him that it would be wise for those interested in the management of mines to face this by no means impossible problem, I can assure him that Blaen Caelan does not come under this category, as I am quite sure he will be convinced if, when next he is in this neighbourhood, he will do me the honour of accompanying me over these mines, when he will see the lode we are working on produces nearer 5 tons than 1 ton of lead per fathom. We have recently completed the sinking of a winze from the 20 to the 30 fm. level, and are now driving on the course of the lode so as to meet the engine-shaft, which is being sunk to the same level about 20 fms. west. When we began sinking the winze the lode was worth about 25% per fm., but as we sank it gradually increased in value until it is honestly worth an average of 50% per fathom for the whole 10 fms. between these two levels, as your correspondent can see for himself if he will accept my challenge. We are purposely making the level we are here driving on the course of the lode very narrow, as until we reach the engine-shaft we have to bring all the stuff up the winze, and, consequently, we are only carrying about one-ninth of the lode with us, but even for this width the lode is worth fully 30% per fathom, and we know from what we have seen in the winze and a cross-cut driven 30 ft. into the lode that we are leaving a considerable width of the ore-bearing portion of the lode by the side of this level, all of which will of course be stripped down when we reach the engine-shaft. As this course of ore is the same which has yielded upwards of 10,000% worth of lead above the 10 fm. level, below which it is as yet intact, and is worth in the 20 an average of 2 tons per fathom for 40 fms. in length (as was confirmed by Captain John Hughes, of Talybont, in his report of November last), while it has evidently reached about double that value in the 30 fm. level, and shows every indication of still further improvement, I think the success of Blaen Caelan is assured, but we shall none the less practise such rigid economy as would, I believe, enable us (situated as we are) to pay profits even upon 1 ton of lead per fathom.

Aberystwith, June 19.

JONATHAN PELL.

PANT-Y-MWYN MINE.

Sir,—I have no doubt but that the request of "Shareholder," as stated in last week's Journal, will be complied with, respecting the directors' report, &c., for the next annual meeting, that the same will be sent out previous to the meeting. Shareholders, no doubt, will be pleased to see the agent's report in your valuable Journal of last week, and I can tell him we had on Saturday last 60 tons of lead in the bin ready for sale, and the mine opening out one of the richest in the Principality; it requires a short time only to verify the statements made by different parties in the Journal, knowing the mine and the district, that a large and profitable mine will be opened up. Of course the price of lead ore being so low will make a considerable difference in this as well as all other lead mines, but we shall make good profits at present low price of lead ore. Had lead kept up to 14d. and 15d. per ton the profits in a short time would be considerable; however, we must work on and hope for better times, which we expect when the Eastern question is settled.

Leamington, June 17.

JAMES YELLAND.

One of the Directors.

"A AND B CONSOLS," OR WHEEL GRENVILLE AND SOUTH CONDURROW.

Sir,—Having held shares in South Condurrow for years past, and remembering that in your valuable Journal of August 14, 1875, and again in October 6, 1877, "Argus" strongly advised that these mines should be united, giving as a reason that South Condurrow had the means of returning double the quantity of tin if the stuff could be got, and that Wheel Grenville could more than double the returns if it had the power and means of returning it; or, in other words, Wheel Grenville had the tin, but lacked the machinery, whilst South Condurrow had the machinery, but lacked the ore. I have carefully watched the reports of the meetings of both mines that have appeared in the *Mining Journal* from time to time with the view to ascertain if there were fair and reasonable grounds for the scheme that had been so ardently proposed. I confess that after waiting for three years the last report of the meeting of the Wheel Grenville shareholders does not in my opinion bear out the predictions of "Argus" that one must decrease and the other increase, for instead of South Condurrow decreasing I find the returns up to the last meeting were about 60 tons of tin per month, and leaving a clear profit of 2533% on the 16 weeks working.

The Chairman last week at the Wheel Grenville meeting congratulated the shareholders on the state of the mine, and said the returns had been fully up to the estimate—50 tons in three months. I believe the new pumping-engine and stamping machinery were set to work last year, and after six months working with two pumping-engines and other machinery the returns of 50 tons for three months do not seem very high. It appears that by an ingenious arrangement of pumps and pipes the difficulty has now been

overcome of conveying the water from one engine to the other underground. I have been tempted to buy shares in the mine, being under the impression that the new and powerful pumping-engine would drain the mine to the bottom, and obviate all difficulties. I notice that at some future period it is hoped the *ne plus ultra* will be reached in returning 30 tons per month—just one-half the quantity that is being returned by South Condurrow.

It is now apparent that to adopt "Argus's" scheme would have been most disastrous for South Condurrow shareholders. I for one certainly prefer South Condurrow as it is to "A and B Consols," for a mine that can give dividends is preferable to a property that seems to consist chiefly in nice calculations, steam-engines, and great expectations.—Plymouth, June 19.

B. A. H.

REMINISCENCES—No. VIII.

Sir,—In my last I omitted an incident or two in connection with Helston. When I was a little boy, about 65 years ago, on going with my father one morning to that town, we found the people in great consternation. On enquiry after the cause we found that a respectable solicitor there had poisoned himself. The family is now nearly extinct, so I may venture to give the name of the suicide without offence—Mr. Thomas Grylls. He held a high position in the town, being the land agent of the Duke of Leeds, Sir John St. Aubyn, Mr. John Rogers, Sir Vyell Vyvyan, and some other landowners. His political influence was powerful. The reason for the rash act I have never ascertained, and will not quote conjectures. After it was discovered that he had taken poison his surgeon was sent for, who found him suffering great agonies, and springing up like one in a flame. "Daniell," said the dying man, "I am no more." He quickly gave up the ghost. He was the father of the late Mr. H. M. Grylls, who died in the year 1834, and of Mr. Glyn Grylls, who died about eight years ago. At that date (1810) Helston was considered the most genteel town in Cornwall, because of the number of independent residents there, all of whom have departed this life, and left few such successors. I suppose we must regard the Messrs. Hill and Mr. Henry Rogers as the present *elite* of that ancient borough. It has very little increased in the number of buildings in 60 or 70 years. Trevarno, the seat of Mr. W. Bickford Smith, is situate two miles northward. Penrose, the seat of Mr. J. J. Rogers, is about 2½ miles southward. Treloar, the seat of Sir R. R. Vyvyan, Bart., is about five miles southward; and Bochym, Mr. R. Davey's, is about four or five miles in the same direction from Helston. When the mines in Wendron and Breage were in full operation Helston market, on Saturdays, was very fully attended, and the shopkeepers were very prosperous; but, of course, they must now feel the pressure of the times in common with people of other places in the mining districts.

Mr. John Silvester, the late tollor for the Duke of Leeds, lived and died at Helston. He commenced life, like many other successful miners, as a "buddle boy." Being a shrewd man, in after life he made some money, and kept the inn called the "Star," in Helston, which he purchased and, some years afterwards, rebuilt. He became connected with Wheal Vor about 50 years ago, and also with Great Work and other mines. He had two sons and one daughter. The eldest son lived "fast," and died early; the other also died, I believe, in youth. Mr. James Clarke married the daughter, and came into possession of the property that remained. He kept the hotel in Penzance, and afterwards the Star, his own house, in Helston. He had three sons, two of whom, I believe, were killed by falls from horses, and the third became a bankrupt, so all the estate is wasted, and the family, I believe, extinct. I forgot to say that Clarke, the father, was also killed by a fall from a horse between Penzance and Helston; the fall broke his neck. This occurred about 12 years ago.

Bonython is a good residence in Cury, late the property of Mr. Joseph Lyle, who devised it to his brother John, who mortgaged it too deeply for his family ever (probably) to have it again. Captain John Lyle died a few years ago, but his daughter is, I believe, living there. Mr. Joseph Lyle left about 45,000% worth of property, which is said to be all exhausted. He was successful in North Basset, South Tolgus, and Carn Brea Mines.

Mr. John Borlase, late of Helston, solicitor, and, I believe, partner with Mr. Thomas Grylls aforesaid, acquired by his legal practice a good estate, and retired from his profession several years before his death. Late in life his understanding became impaired, and he was haunted with a fear of want, which has afflicted many a rich ungodly man. His agent called on him one day, when he said—"Mr. Treloar, I will thank you to get a room for me in the Union House, as comfortable as you can." "Why," said Treloar. "Because," said Borlase. "I shall have to go there; I have not enough property to last." "I can assure you," said Treloar, "an income of 2000% a year so long as you live. Is not that enough for you?" "Yes, if I could tell where it was coming from." "I will assure you of that income," said Treloar. But the old gentleman was incredulous.

This circumstance reminds me of the late Mr. Morrison, of Fore-street, London, the wholesale draper, &c.—a man said to be worth (as people say) four millions sterling. When he became old, and had relinquished active life, he was afflicted with an apprehension of the approach of want. He wished to do something to get a living, so his friends put him to work in his garden at 15s. per week, which was regularly paid him every Saturday evening till his death. He had, it would seem, too much of a good thing (money); he ought to have used his talent, and not have "heaped up" riches. His blessings were cursed. This should be a warning to lovers of money. There is more hope for a spendthrift than for a miser, although both are fools.

In the city of Truro there lately lived two pugilists—a man and his wife. They used to fight like tigers, but last week the man, who was a drunkard, and probably drunk at the time, fell out of his barge in Truro river, and was drowned. So his pugilistic exercises are over.

When I was a little boy I had a narrow escape from the loss of the sight of one eye. On returning from school a school-fellow slung a stone, which hit my eyebrow, cutting it severely, and causing temporary blindness, but leaving no lasting injury.

Godolphin House, in Breage, was the occasional residence of the Earl of Godolphin till about 90 years ago, when 20 rooms were demolished, and it has ever since been used as a farmhouse. I remember seeing some of the large wooden images, life size, lying about parts of the farm. Godolphin Mine waste was anciently a plantation. There was an oak grove near the house, which contained some of the largest trees in Cornwall. It is said that King Charles stopped a night or two at Godolphin during the civil war. It is now the property of the Duke of Leeds, who never visits it. He has a large estate in the neighbourhood.

June 17.

DEVON GREAT CONSOLS.

Sir,—If it can be proved—as has been conjectured by some persons—that the agents of Devon Great Consols have advised the men to resist the will of the board of directors by insisting on the four-weeks month they merit the severest reprobation, and even dismissal. But I doubt if such advice can be proved to have been given by them. I believe that the four-weeks month was originated by agents in other mines, because the change gave them an extra month's salary, but the change was not attended with good to anyone except monthly men until their wages were reduced. Now that Mr. P. Watson has offered to pay the men 24 times a year instead of 13 times as before, what earthly reason can they have to abstain from work? I can see none except a stubborn will for they will be better off under this arrangement than they were formerly, when they had to wait four weeks for a pay. If Mr. Watson's proposition be accepted there will be only four times in the year when the men will have to wait so long as three weeks, so that the men will be paid much the same as they were in Messrs. Williams' and Taylor's mines in the "good old times." If I were a director I would on no account yield to the men; I would rather stop the mine altogether, and I am not sure that that measure is not the best to be taken, it being somewhat questionable whether it can be worked again with advantage to the shareholders. Some writer in the *Journal*, or some other periodical, has intimated that the Lord—the Duke of Bedford—is likely to interfere. I think that such inter-

ference would be highly improper, and, therefore, improbable. I do not for a moment suppose that his Grace would seek to place the labourers in the position of masters, inverting the order of things in society. The employers should be masters as of old. Of course his Grace has plenty of money, and could work the mine himself if he had possession of it, but he would have first to purchase all the personal effects in and on the mines at a valuation before he could do so, which is one of the most unlikely occurrences. His Grace knows better than to work a mine which is so nearly exhausted, and to interfere coercively between master and man would be out of place in him. Those persons who support the men in their resistance to the resolution of the directors are "no better than they should be," and those persons who contribute funds to support men in their wilful idleness deserve a castigation. The foolhardy stubbornness of the men is making their position worse daily, for they must either be getting into debt (most of them) or be living on the charity of silly people, who support them in their indolence, or be short of food. They are injuring their wives and children, excepting those of the men who found employment upon their desertion of the mine. "Laziness will clothe a man with rags."

Truro, June 17. R. SYMONS.

THE ANNIHILATED FIVE-WEEKS MONTH.

Sir,—After a hard struggle by the men of Devon Great Consols this old and greatly dreaded system has met with its final doom in the West. In times of unparalleled depression in the history of mining the men stood bravely out, and notwithstanding all the threats, warnings, and beguilements that could be brought to bear they never faltered for a single moment. Their conduct throughout has been firm, manly, and straightforward, and they have won a victory for the whole of the community of the two western counties that will never be forgotten. Subscriptions are coming in from all directions far and near to help them in this their hour of need.

June 19. A CORNISHMAN.

PAYMENT OF MINERS—THE FIVE-WEEKS MONTH.

Sir,—Having noticed numerous letters in the Journal concerning the four and five weeks months for payments to the miners in Cornwall and Devon, will you please allow me space for a few remarks on the subject. In regard to this matter, which it seems is of great importance nowadays to the companies in the face of such very low prices for their ores, so low, indeed, as to cause most mines to make heavy calls upon stockholders in order to float along; and at the same time it is just as bad, or worse, upon the poor miner, as his wages have been already little enough to enable him to keep strength to follow his daily labour. To this end I see but one remedy in the matter, and this remedy I consider would be beneficial to the employer and employed. Somehow mining companies run away with the idea that one miner is just as good for their interest as another, and if they see one get more wages than another they consider it is either for want of judgment or extravagance on the part of the agent. The agent, of course, knows that he has a good position, and wishes to keep it, and to avoid any complaints concerning miners' wages they will hire him miners by monthly pay, or give them short contracts, telling the miners that they are allowed so much per month, which they can have, but cannot have any more; as much as to say, "You can work hard or easy, your wages will be all the same." This wretched system, I know, was kept up in Cornwall years ago, and I am told it is just the same now, which enables the agents to bring out the miners' pay to a penny of the amount they wish; but what amount of work is accomplished? Why, it stands to reason that it requires three miners to do what two should easily perform. Now here comes the remedy.

For instance, supposing mining companies allow their miners 3s. a month by hard labour: to accomplish this fully the agents must give a price in sight always, and so long a contract as the nature of each place will allow, and by no means allow the price of one contract to interfere with another—i.e., if the contract just ended had by a change in the rock, or otherwise, gone in favour or against the men, it should not influence the agent in fixing his price for the next contract, but let him keep in mind he is letting to those men to get 3s. a month. And when the month expires, should the contract not be finished, but the men are working on in good faith and according to agreement, let the agent credit those men with such amount as is in accordance with the amount they had earned for the next pay-day. Under such arrangements common sense would teach us that those miners would not trouble their employers much as to whether every third month was five weeks or four, but the system would induce men to work hard and be faithful in every respect, allowing the companies to have their mines worked much cheaper, and at the same time the miners would get more money.

Lake Superior, May 27. A CORNISHMAN.

[For remainder of Original Correspondence, see to-day's Journal.]

AUTOMATIC HOUR-GLASS SIGNAL.—The ingenious little signal egg-boiler recently invented by J. A. DE MACEDO, of Headingly, near Leeds, appears to be capable of many other applications where certain work has to be performed at the end of a given time. The sand-glass is charged with sand in the usual way, and is fixed to a frame, and hang in such a way that when the full bulb is turned upward it rests against a stop, and is thus held at such an angle that the centre of gravity of the glass is above its centre of oscillation; but when sufficient sand has run through, the frame carrying the sand-glass overbalances, and becomes inverted. By this movement a hammer attached to the frame is made to strike a bell, and the glass remaining in the altered position the sand runs back into the first bulb ready for use again. There would appear to be many processes, especially in connection with chemical manipulation, in which so ready a means automatically acting upon suitable apparatus at a fixed time would be of great value.

COKE FROM ANTHRACITE DUST.—At the suggestion of a member of the Geological Survey of Pennsylvania, the writer made a number of experiments in using anthracite coal as a basis for coke. The additions of bitumen, gas tar (gasworks waste) or bituminous coal were all used in the mixtures with a view to supplying the necessary cementing qualities lacking in anthracite. An ordinary blacksmith's fire supplied the heat required, black-lead crucibles of about 1 lb. capacity being used to receive the mixtures. The result arrived at proved several points:—1. That any mixture varying from 50 per cent. anthracite dust and 50 per cent. bituminous dust to 75 per cent. anthracite dust, 10 per cent. gas tar or bitumen—for they are interchangeable—and 15 per cent. bituminous dust, will make a beautiful steel, lustrous, heavy coke. 2. That a heat higher than can be obtained in a coking oven is an absolute necessity to produce a good anthracite coke. 3. That in order to obtain a commercial success in producing anthracite coke, the utilization of the gas contained in the bitumen and bituminous coal must be a part of the process, at the present price of anthracite coal. It may be interesting to state that through the kindness of the Harrisburg Gas Company the writer was enabled to make an experiment on a large scale; 260 lbs. of 50 per cent. anthracite dust, 150 lbs. of 30 per cent. bituminous coal dust, and 90 lbs. of 18 per cent. gas tar, were taken, making a charge of 500 lbs., which was placed, after thorough mixture, in three ordinary cast-iron retorts. For four hours these retorts were subjected to the bright-red heat employed in making illuminating gas in iron retorts. The coke resulting was perfect, though not hard enough for blast-furnace use. It was tried in a blacksmith's fire and produced a very high heat, quite equal to that of the best soft coal fire, with the advantage of making a fire free from smoke. Were it possible to make anthracite coke on a large scale equal to what can be produced in a small way, there is no doubt that the vast hills of anthracite dust now cumbering the earth near the breakers would be utilized. The following mixture will make a solid, lustrous bituminous coal and gas tar are thoroughly mixed before charging, and are subjected to a white heat for about 1½ hour; 45 per cent. anthracite dust, 25 per cent. bituminous coal dust, 10 per cent. gas tar. The attendant loss of weight to a similar treatment as the above mixture, and the result was an inferior coke, notwithstanding the fact that some coke is well in a blacksmith's fire.—*Journal of Mining and Metallurgy* (New York).

Meetings of Public Companies.

RICHMOND CONSOLIDATED MINING COMPANY.

The ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Tuesday.

Mr. GEORGE HOPKINS, C.E., the chairman, presiding. Mr. HUBERT AKERS (secretary *pro tem.*) read the notice calling the meeting. The minutes of the last half-yearly meeting were read and confirmed. The reports and accounts were taken as read.

The CHAIRMAN said: Gentlemen, I will proceed to make a few remarks upon the report and accounts. As stated in the report, you will remember that the accounts now laid before you cover a period of ten months only, although they are our yearly accounts, and during those ten months the works—that is to say, the smelting works and the refinery—have been shut down four months, when dead work only was being carried on at the mine, so the actual profitable working during that period has been only six months, and that is even a short six months, for you will observe that two furnaces only were started on Sept. 5, and the third in November. By reference to the capital account you will see we have received during the ten months a small outstanding sum of 12½, which has remained a long time unpaid on our capital, thus making our capital 270,000 fully paid up. We have expended on capital account 932½, the details of which you will find in the abstract under the heading letter A. As has been our custom from the commencement of the company, that amount has been taken out of revenue, so that the capital has been kept down always just to the even 270,000. At the time these accounts were prepared, which is up to February 28, we appeared to owe, and we did owe, 37,800, on account of debentures, but in March last we paid off 12,800, of that amount then falling due, so that the debenture debt now stands at 25,000, and your capital at 270,000. I shall have something to say a little later on about the capital, but for the moment I will pass on to the mining profit account. If you will kindly follow me, and take the debit side of the account, you will see that the cost of mining and hauling to the furnace, of making the explorations, &c., is, as per Abstract B, 49,936½, and that amount includes 13,746½, 10s. 3d. expended in labour on dead work, and in making explorations, drifts, &c., the consequence of which is that the total expense of mining and hauling is this year 36½ per cent, whilst our usual expense for those two items is 39½—that is, 38 for mining proper, and 3½ for haulage—so that in consequence of the 13,000, odd being expended on dead work these expenses have increased, as compared with previous years, 31 per cent. The smelting expenses amount to 72,908½, 3s. 4d.

A SHAREHOLDER: Allow me to suggest that it will save time to leave out the fraction.

The CHAIRMAN: Well, the smelting expenses are 72,908½, which are detailed under the head C. Now, the total cost of smelting this year has been a fraction over 84 per cent. That is a great improvement over former years. It used to be about 82 per cent when we first started, and has been gradually reduced down to the present price. The great improvement has been in consequence of alterations made in the furnaces, and in the selection of proper and suitable fluxes for mixing with the ore. It has been found that the ores were deficient in silica, and, as a result, in the process of smelting, the silica contained in the lining of the furnace was eaten out very rapidly; the consequence was, as you will remember, these furnaces had to be shut down every two or three months to be re-lined, which was a very expensive process, and involved considerable loss of time. We have also an improvement in the consumption of charcoal: whereas formerly we used to consume 40 bushels of charcoal to every ton of ore, we are now only consuming 30 bushels.

Mr. BRIDGWATER: Standard bushels?

The CHAIRMAN: I am merely making a comparison between 40 bushels consumed formerly and 30 bushels consumed now, which is a reduction of 25 per cent. We have been smelting some ores for the Jackson Company, for which we have received \$19 per ton, and as our cost, including everything, has been \$14 we have made on the ore a profit of \$5 per ton, and we are getting \$2175. The fluxes amount to 13,746½. These I need not allude to, they are outside our purchase principally to assist in the reduction of our own ores, and contain more silica than ours. The general expenses, 9924½, which you will find under Abstract D, includes, as you will see, 2500, voted by the board to the managing director, Mr. Probert, for his services during the year. And while I am on this question I will just remind you that as regards that amount money in Eureka has a very different value to what it has in London. A sovereign there will not go much further than 7s. or 8s. here. I believe the actual relative value is something like this—\$1 will go as far as about 1s. 6d. will in this country. You will no doubt readily understand this when you see, as you have already seen, that even our time-keeper out there gets 6000 a year, and our day foreman gets 6000 a year, and our manager has always had 20000 a year; and, therefore, in voting a sum of money to our managing director we thought we could not give him less than 2500, and, therefore, we voted him that sum. These expenses come to a total of 145,745½, as the expense of making 5689 tons of crude bullion. Then, following the accounts in the order, we have the market expenses, under abstract E, which consist of the carriage—more commonly known than as freight—of the lead, and the expressage of the doré bars, amounting altogether to 36,507½. Then we have the insurance on lead shipped round from San Francisco to New York 592½, and we have commission and brokerage to our bullion agent and New York brokers 3415½; and here I would mention, that this is the first time that these items have appeared in our accounts, for hitherto we have adopted the course which I believe is very common in mining companies—only to bring into the accounts the net sums received from the bullion agent, ex his commission and expenses—we find even in the St. John del Rey system is carried out there, and to some extent it would seem to be a right system, because this money never actually comes into the possession of the company, and the bullion is handed over to the bullion agent, and he does not return the gross amount, and we pay him a commission, and he hands us the net amount he realizes on the bullion, and some of you, gentlemen, will understand this much better than I do, for I am told this—that when you employ a broker it is the usual custom not to disclose the name of his agent, because if he does so he is released from his liability to the company, and we have put these items in the accounts this year so that you may see what is the total expense in every respect. These items, with sundry charges, come to a total of 31,324½—the market expenses paid by the company during the ten months. That, with some 72 tons of bullion purchased, makes a total of 55,507½, which is carried to the creditor side of the account, and deducted from the gross returns received to the bullion agent, and we are left with a balance of 297,281½; deducting the expenses of marketing—56,507½—leaves us 240,774½. To this we have to add the bullion in transit and at the works, and after deducting the value of the bullion which we had at the commencement of the accounts in stock, and which was estimated to produce in our last accounts the sum of 7,790½, 4s. 11d., we arrive at the total net value of the bullion 232,984½. Then we have the gross returns on lead shipped round from San Francisco to New York 592½, and we have commission and brokerage to our bullion agent and New York brokers 3415½; and here I would mention, that this is the first time that these items have appeared in our accounts, for hitherto we have adopted the course which I believe is very common in mining companies—only to bring into the accounts the net sums received from the bullion agent, ex his commission and expenses—we find even in the St. John del Rey system is carried out there, and to some extent it would seem to be a right system, because this money never actually comes into the possession of the company, and the bullion is handed over to the bullion agent, and he does not return the gross amount, and we pay him a commission, and he hands us the net amount he realizes on the bullion, and some of you, gentlemen, will understand this much better than I do, for I am told this—that when you employ a broker it is the usual custom not to disclose the name of his agent, because if he does so he is released from his liability to the company, and we have put these items in the accounts this year so that you may see what is the total expense in every respect. 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away above by their predecessors. They had sunk the shaft 11½ fms. below the 65. The dressing machinery erected was the best ever put up in Wales, and was capable of turning out about 30 tons of ore per month to commence with. The cost of stoping, dressing, and preparing the ore for market—including dead and active labour—would average about 8s. per ton, and the amount realised above that sum

present would fetch about 16l. per ton. As stated in his report, he expected to start dressing operations next month, and the reservoirs would be finished in about three weeks time. They had about 100 tons of ore on the surface ready for dressing; that ore represented a value of about 16,000l. The Court Grange sett was over 600 acres in extent, and the Mynydd Goreddu lode penetrated it for about 400 fms. The mine was only two miles from a railway station, and was otherwise well situated. On the whole he considered that the future of the property was assured, and that the shareholders had every reason to be pleased with their property.

A SHAREHOLDER wished to know what description of boring-machine it was proposed to purchase? The matter was one requiring great caution.

Mr. ROGERS (a director) explained that it was not proposed to purchase boring-machines at all, but only to contract with some company to do the work at an agreed price. The company would run no risk, and would simply pay upon results. (Hear.)

Mr. PELL hoped they might get the work done as cheaply as by hand. The saving in time would be very great.

Another SHAREHOLDER apprehended that if they drove so rapidly the ore brought to surface might be more than could be dressed, and would cause inconvenience.

Mr. PELL said that if required duplicate dressing machinery might be provided at a very small expense—say, 120l. or 150l. They had sufficient power for a large extension in that direction. (Hear.)—The resolution was then put and carried unanimously.

The retiring directors (Messrs. P. J. Brigg and Alfred Wilson) were then re-elected, as was also the auditor, Mr. L. H. Evans, and the proceedings terminated with a vote of thanks to the shareholder who advanced the 2500l. to meet the requirements of the company, and to the directors for giving their personal guarantee for the repayment of the same.

The meeting having been declared extraordinary, in accordance with the notice convening it, the shareholders unanimously passed a special resolution increasing the capital of the company to 3,000l., by the issue of 6000 ordinary shares of 1l. each.

[For remainder of Meetings, see to-day's Journal.]

SAFETY-LAMPS.—Anything of which we could write which is calculated to reduce the dangers of mining operations would be interesting to our readers; and it is with great pleasure that we call attention to the invention of an improved safety-lamp. Mr. J. Williamson, the experienced manager of the extensive works of the Cannock and Rugeley Colliery Company, at Hednesford, has for a long time been making a study of various safety-lamps hitherto before the public, and after many trials and a long course of experiments, has succeeded in producing a lamp which is destined to supersede all others for mining purposes. On Monday, the 3rd inst., Mr. Williamson read a paper on "Safety-Lamps" at a meeting of the North Staffordshire Institute of Mining and Mechanical

Engineers, at Stoke-upon-Trent, in which he explained the points of his new lamp and compared it with the other lamps commonly in use. It appears to combine the best elements in what have been regarded hitherto as two of the best lamps—the Stephenson and the Clanny. It is even safer than the Stephenson, whilst it gives a better light than the Clanny. The new lamp has been put to severe tests by Mr. Williamson and by engineers in the North of England, and in no case could the lamp be made to explode. When we are told that the firing of a shot, the closing of doors, or the fall of a roof, is sufficient to cause the Davy, the Clanny, or the Meuseler lamp, when in use in an explosive mixture, to explode, it is no small achievement to have produced a lamp with all the advantages of the hitherto safest lamp (the Stephenson), and giving a superior light to any. Its light is not easily extinguished when exposed to air passing a high velocity; and when approaching a body of gas, the top or halo may be seen clearly; and if the lamp be plunged into a body of gas, the light is extinguished by generation of carbonic acid gas, before sufficient heat is produced to harm it. We were much interested in an opportunity we had of seeing the new lamp tested. There has been a good deal of discussion of late as to the desirability of prohibiting the use of naked lights in mines, and enforcing the use in all cases of safety-lamps. At present it is the exception and not the rule to use safety-lamps in coal mines; and although it is quite possible for explosions to occur where lamps are used, from other causes, yet their general use would be an extra precaution. There are very few mines but that yield inflammable gas, but in such small quantities as not to be perceptible until an explosion occurs. The line between fiery and non-fiery mines is very difficult to determine, and the only real security will be in an Act of Parliament making the use of safety-lamps compulsory, and at the same time insisting on mines being properly ventilated. It is too true that in many cases ventilation may often suffice, and is neglected, where lamps are in use; and, in the same way, where fans are used for ventilation purposes, some people act as if because they have a fan, there is no need to be so particular in keeping the air-ways right, &c., &c. But this can be no argument against the use of safety-lamps. One of the greatest drawbacks to the general use of safety-lamps has been the insufficient light they gave, and we think this perhaps the most valuable improvement in the "Williamson" lamp, as it gives a light quite equal to the candle. This we regard as a very great point of safety, as miners will thus lose the temptation to venture a naked light because of the thin light of their lamp. We heartily congratulate Mr. Williamson upon his valuable invention.—*Widest Advertiser.*

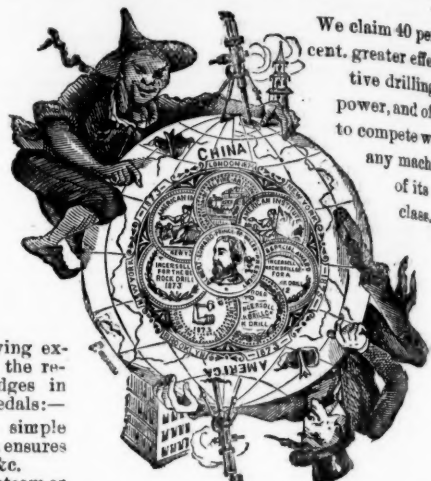
HOLLOWAY'S OINTMENT AND PILLS—SORES, WOUNDS, AND ULCERS.—Every variety of sore, ulcer, eruption, boil, and carbuncle is safely stopped in its destructive course by the timely application of this healing ointment. It arrests unhealthy and substitutes healthy action, thus curing the inflamed, irritable, and spreading diseases affecting the skin. Holloway's ointment has gained an imperishable fame for its facility in healing old inflammatory sores about the shins and ankles, and for bad legs and old wounds it cannot be equalled; nor is it less efficacious in gathered breasts and abscesses. When the complaint has been of long continuance, Holloway's pills will expedite recovery, if taken in those doses which act as alteratives on the stomach, and tonics on the constitution.

PATENT

"INGERSOLL ROCK DRILL,"

LE GROS, MAYNE, LEAVER, & CO.,

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5, PARK PLACE, NEW YORK, U.S.A.



We claim 40 per cent. greater effective drilling power, and offer to compete with any machine of its class.

The following extracts from the reports of Judges in awarding Medals:—

- "2. Its simple construction ensures durability, &c.
- "4.—The steam or air cushions at each end of cylinder effectually protect from injury
- "5. Its having an automatic feed, giving it a steady motion, &c.
- "6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.
- "7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues Price Lists, Testimonials, &c., as above.

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THE HAND POWER ROCK
DRILL COMPANY (LIMITED),

T. B. JORDAN, SON, & MEIHE,
ENGINEERS AND CONTRACTORS
For General Mining and Agricultural Machinery,
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OFFICES,—63, QUEEN VICTORIA STREET, LONDON, E.C.,
ADJOINING MANSION HOUSE STATION.

* * * Illustrated catalogues in English and French on application.

LOCOMOTIVE TANK ENGINES

FOR MAIN LINE TRAFFIC, SHORT LINES COLLIERIES, CONTRACTORS, IRONWORKS, MANUFACTORIES, &c., from a superior specification, equal to their first-class Railway Engines, and specially adapted to harpcurves and heavy gradients, may always be had at a short notice from—
MESSRS. BLACK, HAWTHORN, AND CO.,
LOCOMOTIVE, MARINE, AND STATIONARY ENGINE WORKS,
GATESHEAD-ON-TYNE.

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FOR CONVEYING
CHARGE IN



SAFETY FUSE
FIRE TO THE
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Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1861; at the "INTERNATIONAL EXHIBITION" of 1862 and 1874, in London; at the "IMPERIAL EXPOSITION," held in Paris, in 1865; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Antwerp, in 1868; TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna, in 1873; and at the "EXPOSITION NACIONAL ARGENTINA," Cordoba, South America, 1872.

BICKFORD, SMITH AND CO.,
OF TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES OF SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—
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BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES,
Suitable for wet or dry ground, and effective in Tropical or Polar climates.

W. BENNETTS, having had many years experience as chief engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety his own manufacture, of best quality, and at moderate prices.
Price Lists and Sample Cards may be had on application at the above address.
LONDON OFFICE.—H. HUGHES, Esq., 45, GRACECHURCH STREET.

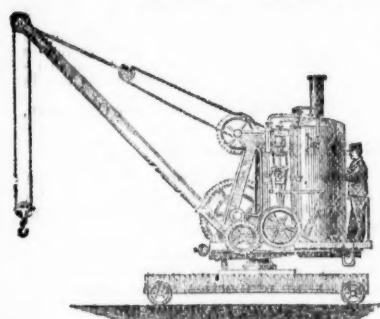
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STEAM CRAES,
Portable or Fixed, for Railways, Wharves, &c., for
unloading
COAL, BALLAST, &c.,
To hoist 15 cwt. to 30 tons.

LOCOMOTIVES,
6 to 27-horse power. For Steep Inclines and
Sharp Curves.
Gauge from 2 feet upwards.
Geared to draw very heavy weights in proportion
to their power, and SPECIALLY
SUITABLE FOR



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MANUFACTURER OF

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THE OILED CLOTH IS ESPECIALLY RECOMMENDED FOR DAMP MINES, AND IS
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THE NON-INFLAMMABLE FOR THE MORE DANGEROUS MINES.

Samples and prices free, on application at the Works,

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BROADBENT'S

Patent Improved Blake Stone Breakers.

GUARANTEED NO INFRINGEMENT OF ANY PATENT.

AWARDED PRIZE MEDAL,

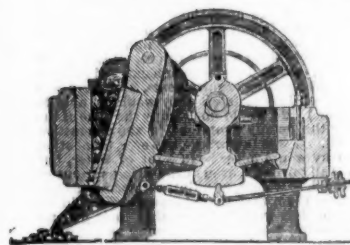
In competition with the best-known Stone Breakers,
September 7th, 1876,

Formerly Manufacturers for the late H. R. Marsden, having made
for him in less than four years 336 Stone Breakers.

ESTABLISHED 1836.

Prices and particulars on application to the Patentees and Sole Makers,—

ROBT. BROADBENT AND SON, STALYBRIDGE.



THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL SHEAR, BLISTER, & SPRING STEEL

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

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HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,

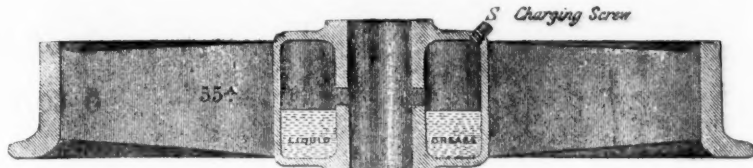
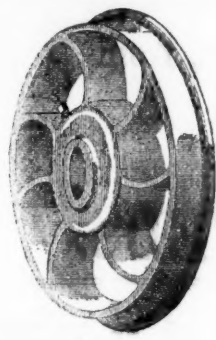
AND ARE THE SOLE MAKERS OF

Hadfield's Self-oiling Steel Wheels

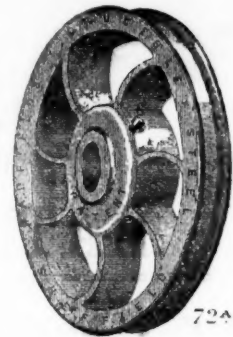
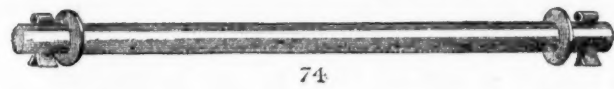
(PATENTED).

These possess advantages held by no other wheels, and are specially adapted for Collieries, Ironstone Mines, Slate Quarries, Lead and Copper Mines, &c., &c., where LOOSE Wheels are used (i. e., those revolving upon their own axles). By the old system of lubricating loose wheels, it is well known this is attended with constant labour and excessive waste; and as so little of the grease or oil applied reaches the wearing surfaces, and as re-greasing can only take place at fixed parts of the workings, the bosses of the wheels and bearings of the axles soon become dry, and cut each other: thus causing enormous wear and tear, and necessitating extra labour, haulage power, and expense. These and numerous other defects are entirely remedied by these wheels, as will be readily seen from the following illustrations and advantages claimed.

N.B.—Price per Set of Wheels and Axles (ready for use) forwarded on receipt of—1. Diameter of Wheel on tread. 2. Width of tread. 3. Diameter and total length of axle, also whether No. 74 or 75. 4. Rail gauge. 5. Rolling load.



Section



This Advertisement is varied from time to time.

[This Sheet of Drawings is Copyright.]

The following are a few of the numerous Advantages claimed by the above Self-oiling Wheels:—

- 1.—Two-thirds (at least) less grease or oil is required than at present used by any known method of lubricating Mining Wagons, whether by hand, machine, or otherwise.
- 2.—These wheels effect a very great saving in haulage power; also wear and tear—being so constructed as never to allow the bearings to become dry. The revolving of the wheel leads out the oil as required, and immediately the wagon stops the lubricator ceases its action.
- 3.—No waste of grease can occur, no matter in what position the wagon may be placed, when discharging its contents (even if up side down); and when the wagons are not in use it is utterly impossible for any grease to escape, as it is all stored below the outlet (as shown above).
- 4.—When once these wheels have been charged with liquid grease (which can be done by any inexperienced person) they do not require any attention or re-greasing whatever for several weeks or even months afterwards, in proportion to the distance travelled.
- 5.—These wheels can be readily fixed to any description of either wood or iron carves now in use, whether the wheels are upon the inside or outside of the frame.
- 6.—They are exceedingly simple in construction, have no detail, and are not liable to get out of order.
- 7.—They possess great strength, durability, and extreme lightness, being made of CRUCIBLE STEEL.

Where FAST Wheels and Axles are adopted instead of Loose ones, as shown above, see our Illustrated Sheets of Drawings Nos. 2 and 3 of

Crucible Steel Wheels and Axles, fitted complete by Hadfield's Patent Method, and Hadfield's Self-oiling Pedestals.

ORMEROD, GRIERSON, AND CO.

ST. GEORGE'S IRONWORKS, MANCHESTER,

Engineers, Millwrights, & Boiler Makers,

MANUFACTURERS OF

Stationary Steam Engines and Boilers for all purposes, Mill Gearing, Sugar Machinery, Cranes, Turn-Tables, and Railway Fixed Plant of all descriptions; also, the Diamond Rock Boring Company's Plant—viz.: Compressed Air and Air-Compressing Engines, Prospecting Machines, Tunnelling Machines, and Shaft Sinking Machines.

HYDRAULIC PRESSES OF VARIOUS KINDS

Have the Largest Assortment in the Trade of

PATTERNS,

WITH MACHINE-CUT TEETH, OF

SPUR WHEELS, BEVEL WHEELS.

MITRE WHEELS,

ALSO

FLY WHEELS.

DRIVING PULLIES & DRUMS,

CAN BE SUPPLIED BORED AND TURNED IF REQUIRED.

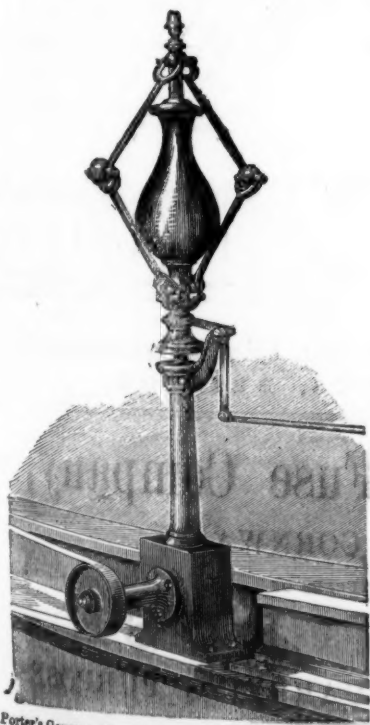
CATALOGUES ON APPLICATION.

LONDON OFFICES:

No. 5, WESTMINSTER CHAMBERS,

VICTORIA STREET,

WESTMINSTER, S.W.



Porter's Governor for Stationary Engines. Also Governor on the same principle adapted for Marine Engines.

ALEXR. WILSON & CO.,

VAUXHALL IRONWORKS.

LONDON, S.W.,

MANUFACTURERS OF

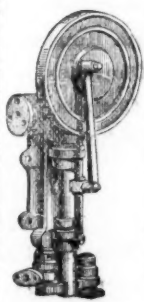
THE VAUXHALL DONKEY PUMPS.
THE EXCELSIOR DIRECT-ACTING PUMPS.

HIGH-PRESSURE SCREW ENGINES
COMPOUND SCREWS ENGINES.

PATENT SURFACE CONDENSING ENGINES.

PATENT PADDLE ENGINES.

HOISTING MACHINERY.



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SMITH'S

NO. 1 BRICKWORK

-ICES FROM

£6.15. NETT.

FREE ON C.N.R.

CALDERFORD.

HEARTH.

REQUIRED.

CAN BE TAKEN DOWN

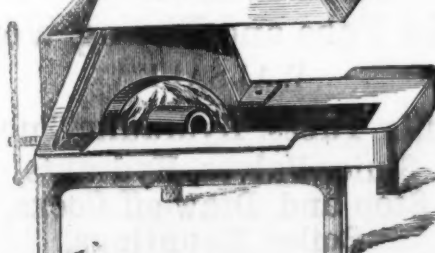
& SET UP AGAIN

IN 1/2 AN HOUR.

R. HUDSON.

GILDERSOME FOUNDRY,

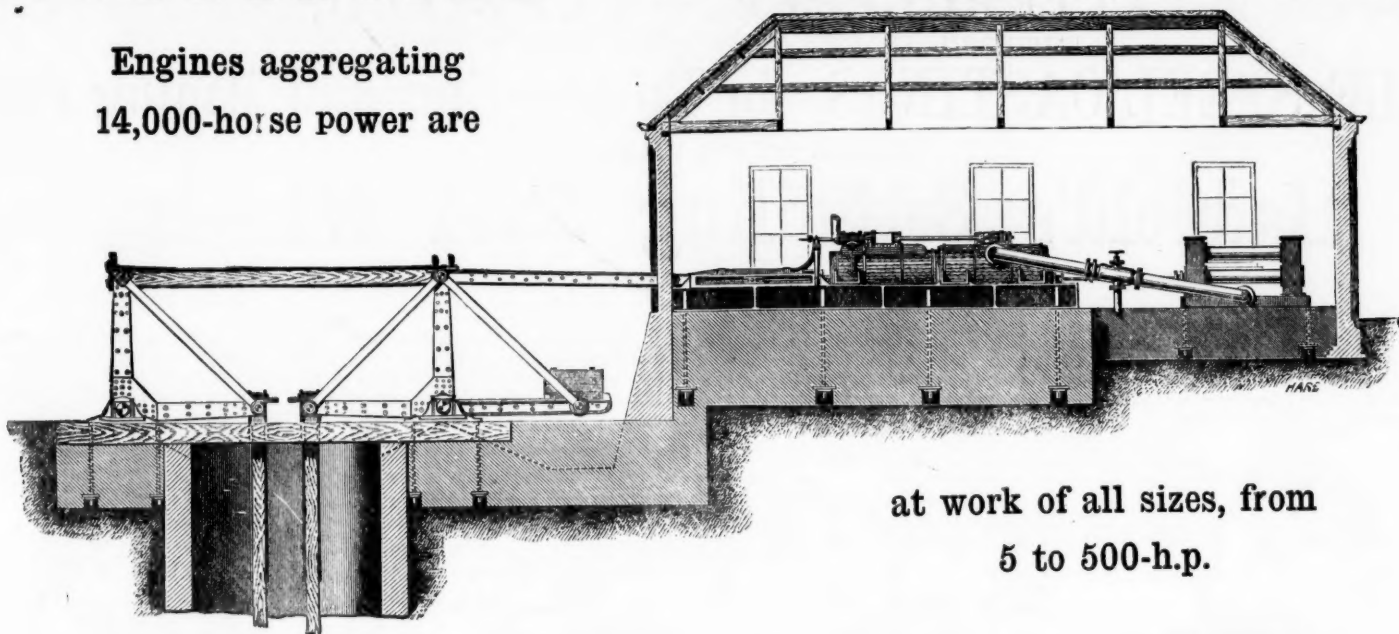
NEAR LEEDS



GREAT SAVING IN ROOM.

COMPOUND DIFFERENTIAL PUMPING ENGINES.

Engines aggregating
14,000-horse power are



at work of all sizes, from
5 to 500-h.p.

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BOLTS, NUTS, AND COACH SCREWS.

ARCHER AND HARPER,

PROVIDENCE BOLT AND NUT WORKS, THE GREEN, DARLASTON,

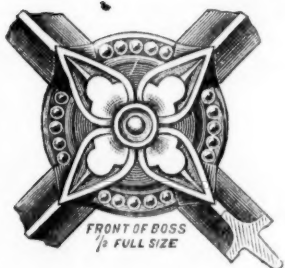
Manufacturers of all kinds of Shipbuilders', Engineers', Coach, Wagon, and Fish Bolts; Coach Screws; Railway Spikes and Brobs; Hot-pressed and Forged Nuts, Rivets, Washers, &c., &c.

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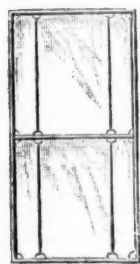
HARRIS'S PATENT WROUGHT-IRON WINDOWS.

DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



GREAT BRITAIN,
UNITED STATES OF AMERICA,

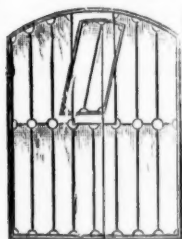
ARE STRONGER, SUPERIOR, AND CHEAPER
THAN ANY OTHER METAL SASHES YET
PRODUCED—COST LESS FOR GLAZING—
ARE AS CHEAP IN MANY CASES AS WOOD



PAIR OF SASHES
TO RUN WITH WEIGHTS



WATER-TIGHT
WINDOWS



BASEMENT SASH
NO GUARD BARS OR
SHUTTER REQUIRED



In Basement Storeys and Exposed Positions Shutters
and Guard Bars are dispensed with.

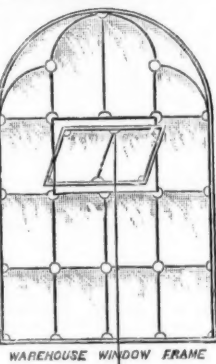
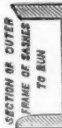
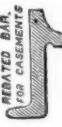
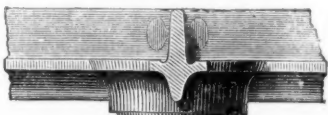
ILLUSTRATED CATALOGUES
ON APPLICATION.

HOME AND

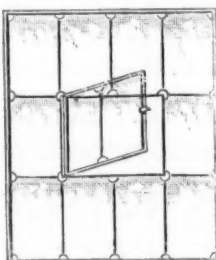
SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.
90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.

PATENTED IN



WAREHOUSE WINDOW FRAME



FACTORY OR MILL WINDOW FRAME

FRANCE,
GERMANY, AND BELGIUM.

—CAN BE DESIGNED AND MANUFACTURED
TO SUIT ANY STYLE OF ARCHITECTURE
OR POSITION WHERE A WINDOW MAY BE
REQUIRED.

ARE BEING EXTENSIVELY USED IN—

Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.

ILLUSTRATED CATALOGUES
ON APPLICATION.

Security is obtained in
these Skylights with-
out Guard Bars, and
with less obstruction
to Light.

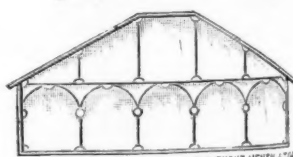


SECTION OF
SKYLIGHT
CROSS BAR

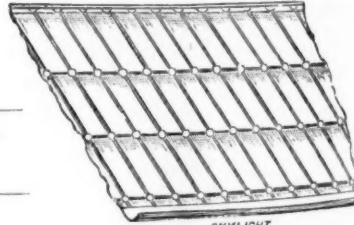
EXPORT.



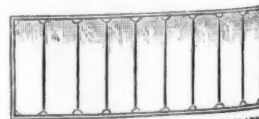
BACK OF BOSS
1/2 FULL SIZE



RAISED ROOF LIGHT WITH OR WITHOUT VENTILATOR



SKYLIGHT



FLOOR OR PAVEMENT GRATING FOR GLAZING

LAMBERT BROTHERS,
Alpha Tube and Fitting Works,
WALSALL.

Boiler Tubes, Hydraulic Tubes,
Sluice Valves, Hydrants,
Stop and Draw-off Cocks,
Boiler Mountings,
Safety Valves, Pumps, &c.

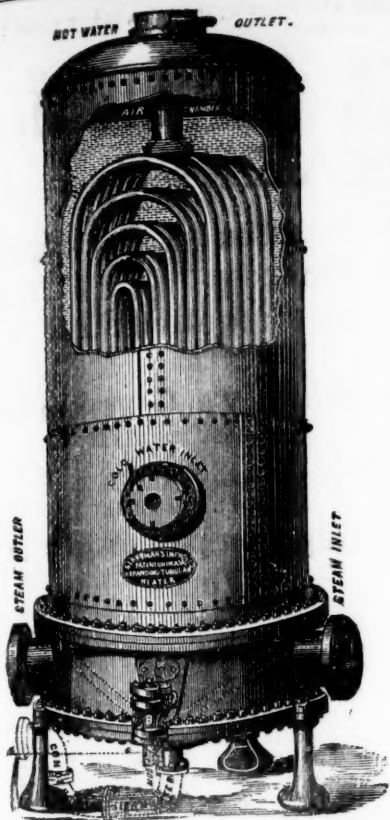


British and Foreign Safety Fuse Company,
REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,
FOR MINING AND QUARRYING PURPOSES.

PRICES ON APPLICATION.



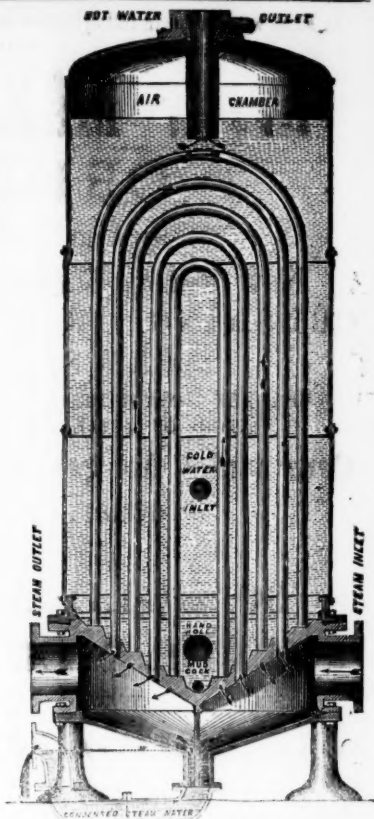
IMPORTANT.

JOSEPH WRIGHT AND CO.

(LIMITED),

NEPTUNE FORGE ENGINE
AND BOILER WORKS,

TIPTON, STAFFORDSHIRE.



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREEN-HOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c. &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using FOUR HUNDRED AND THIRTY-THREE of these Heaters.

COLEBROOK'S PATENT STEAM PUMPS, FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.

SOLE MAKERS,—

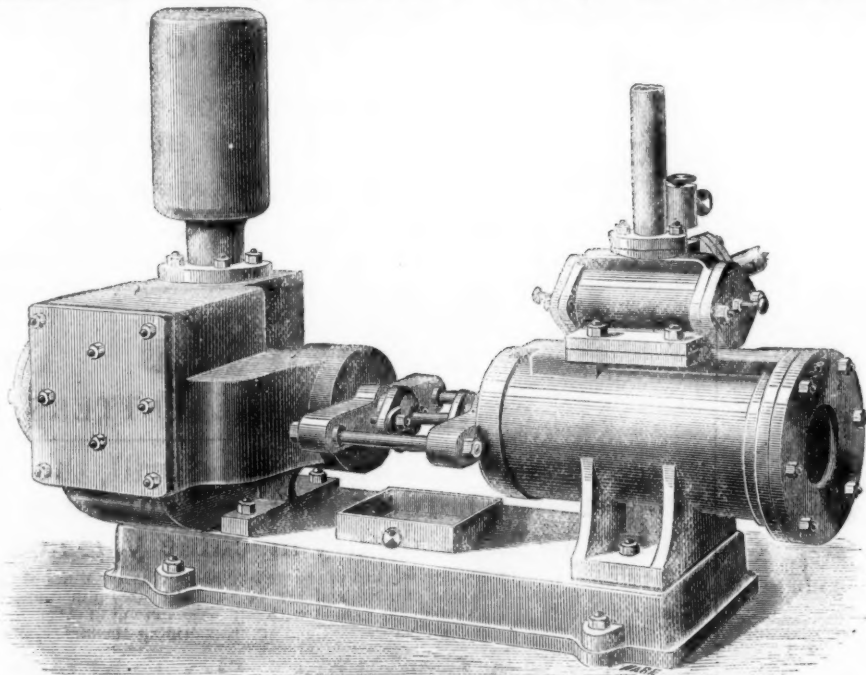
MAY AND MOUNTAIN,
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52	£40
Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	12	12	...
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12	...
Length of Stroke.....Inches	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	...
Price	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135	...

H. R. M. will exhibit in full operation at the Royal Agricultural Society of England Show, at Bristol, July 10th to 15th, one of his New Patent Stonebreakers, with screening apparatus, and on wheels to travel; also fitted with his new patent toggle bearing and drawback motions, and reversible planed back cubing jaws in sections.

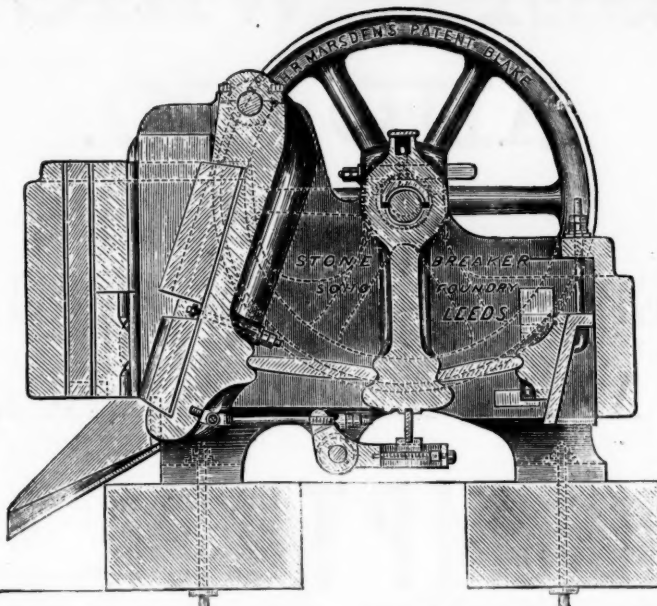
H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE CRUSHERS AND STONE BREAKERS,

WITH THE
New Patent Reversible
CRUSHING OR CUBING
JAWS,

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING
Four times longer than any
other.

60 GOLD AND
SILVER MEDALS.

OVER 2000 NOW IN
USE.



For Crushing to any degree
of Fineness, or Breaking
to a required size.

Her Majesty's Government
USE THESE MACHINES
EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.

H. R. M. has long observed the want of cheaper
machines,
STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances
for the production thereof, been enabled to reduce
the prices, yet keep up at the same time the well-
known strength of construction. Reduced prices
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

6, Queen-street-place, May 10, 1877.
DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our manage-
ment, and are pleased to be able to state that they have in all cases given the greatest satisfac-
tion. We are, yours faithfully,
JOHN TAYLOR AND SONS.
H. R. Marsden, Esq.

INTENDING BUYERS ARE CAUTIONED AGAINST PURCHASING OR USING ANY INFRINGEMENT OF THE NUMEROUS PATENTS OF H. R. MARSDEN.
ILLUSTRATED CATALOGUES, TESTIMONIALS, and every information, on application to:—

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.
ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.

TO COLLIERY AND MINE OWNERS.

R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—
Messrs. THOMPSON, WISE, & CO., Barry Port, South Wales.
Messrs. DYMOND'S Liversedge Coal Company, near Leeds.
Messrs. W. ACKROYD and BROS., Morley, near Leeds.
Messrs. CLAYTON and SPEIGHT, Farnley, near Leeds.
Messrs. W. WORMALD and SONS, Rawdon, near Leeds.
KINGWOOD COAL and IRON CO., near Bristol.
MIDDLETON COLLIERY CO., near Leeds. | NEWTON COLLIERY, near Castleford. | Messrs. RUSHFORTH and Co., Adwalton, near Leeds. | Messrs. JAS. FUSSELL, SONS, and Co., Frome, Somersetshire.
T. VAUGHAN and Co.'s TRUSTEES, South Medomsley Colliery; and others.
R. HUDSON, Engineer and Ironfounder, Gildersome Street Foundry, near Leeds (Five minutes walk from Gildersome Station, G.N.R.)

The Barrow Rock Drill COMPANY

Are NOW PREPARED TO SUPPLY their DRILLS, the ONLY
ONES that have been SUCCESSFULLY WORKED in the
MINES of CORNWALL. At DOLCOATH MINE, in the
HARDEST known ROCK, a SINGLE MACHINE has, since
its introduction in July, 1876, driven MORE THAN THREE
TIMES the SPEED of HAND LABOUR, and at TWENTY PER
CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together,
and at a proportionately increased speed. They are strong,
light, and simple, easily worked, and adapted for ends and
stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS,
and all necessary appliances for working the said Drills.

Apply to—

LOAM AND SON,
LISKEARD, CORNWALL.

IMPROVED STEEL WIRE FOR ROPES.

WEBSTER & HORSFALL,
(ORIGINAL PATENTEES),

MANUFACTURERS OF IMPROVED STEEL WIRE FOR ROPES
FOR COLLIERIES,

RAILWAY INCLINES, PLOUGHS, HAWSERS, &c.
SOLE MANUFACTURERS of the HOMOGENEOUS WIRE for the
ATLANTIC CABLES of 1865 and 1866.

WEBSTER AND HORSFALL,
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THE GREAT ADVERTISING MEDIUM FOR WALES.
THE SOUTH WALES EVENING TELEGRAM
(DAILY), and
SOUTH WALES GAZETTE
(WEEKLY), established 1857,
the largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the
second edition at Five P.M. On Friday, the "Telegram" is combined with the
South Wales Weekly Gazette, and advertisements ordered for not less than six
consecutive insertions will be inserted at a uniform charge in both papers.
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The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron
and coal districts. It is, therefore, one of the leading organs for advertising every
description of Iron Manufactures, Machinery, New Inventions, and all matters
relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
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MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED
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Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and
ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected
by this machinery, on application.

CONTRACTS TAKEN, OR SPECIAL TERMS FOR HIRE.

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THE ROANHEAD ROCK DRILL.

BY ROYAL LETTERS PATENT.

This justly-celebrated Rock Drill, the only one invented that will
work in the hardest rock without more than the usual repairs re-
quired by any ordinary machinery, is now offered to the public.

It has been most successfully worked in the well-known Hematite Mines of Lancashire and Cumberland. Will drive 50 to 60 ft.
in hard rock without change of drill, and can be worked by any miner, and kept in repair by any blacksmith. It is the most
simple rock drill ever invented, and cannot with fair usage get out of order.

Plans, Estimates, including Compressors, and all other Mining Machinery, supplied on application to the sole makers,—

SALMON, BARNES, AND CO.,
MINING ENGINEERS.

Canal Head Foundry and Engineering Works, Ulverston.

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Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES,
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Cable Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.
STOURBRIDGE FIRE BRICKS AND CLAY.